

CONCEPTUAL DISCUSSION OF WORK PLANS

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The following is not to be construed as research protocol for brainwave training and monitoring of psychophysiological correlates. Rather it is an informal discussion of some of the concepts and underlying principles involved in these efforts. A study of the terrain excites the imagination and the purpose of this paper is to excite others with the view. The implications are profound. Hopefully, we can contribute something to their investigation.

This paper will serve our turn if it provides some insight as to the state of the art at our point of entry into the work.

A new picture of life is unfolding. Until recently we have thought of life in terms of physical substance. Somehow out of the bundle of mechanical and chemical properties sprang our emotions and thoughts. This was the position of science and therefore the basis of most people's beliefs. While an opposing camp suggested that the human mind—at least—was independent of the physical body and merely occupied it as a medium through which to function within material existence. This was a position reserved for the religious and metaphysically inclined. For the most part it was held that the secrets of life would need be found within the atoms, molecules and cells of living organisms.

How the physical body could have nonphysical functions was not clearly understood by science. Nor, on the other hand, were the theologians and metaphysicians able to adequately explain how the mind or spirit could act upon material substance. The explanations were indeed vague. If spirit and matter were both accepted as realities existing at either end of life's spectrum, they remained very much isolated in those positions for the bridge between could not be found.

But apparently the construction of this bridge is now underway. Technological breakthroughs have provided scientists with the tools to examine something else but the mechanical and chemical properties of living organisms. Investigators pursued smaller and smaller particles until instead of talking about smaller and smaller objects, they spoke of vibrations, frequencies, waves. The various forms of life instead of being a collection of units took on the appearance of energy being in a constant whirl and moving in and out of transient structures. At the same time that cells and tissues could be seen as energy fields, it was also discovered that emotions and thoughts produced measurable energy. A common denominator between the material and the abstract had been established. It was no longer so difficult to imagine how mental stress could result in ulcers or malnutrition produce hallucinations.

The new research has revealed that living organisms have electrodynamic qualities. They receive and transmit various radiations and in doing so influence and are influenced by all divisions of the electromagnetic spectrum: gamma rays, x-rays, ultraviolet light, visible light, infrared, short and long radiowaves. These discoveries have launched scientist and philosopher alike into the investigation of the electrodynamic dimensions of life and one of the most exciting outcomes of this adventure is the demonstration that the human organism can no longer be described as limited to a bag of chemicals. He can no longer be so confined and emerging from this cocoon he appears no longer imprisoned by space and time. This is exciting news but equally provocative is the new evidence that the nature or pattern of any life form can be determined electrically before it becomes materialized in physical substance. This finding has far-reaching implications.

The evidence questions the currently-accepted idea that the DNA molecule is life's master key. The new findings suggest that behind the chemistry and mechanics of molecules is an electrodynamic principle which precedes and determines physical form. Should future research continue to confirm this, the design for any form of life can be known prior to its materialization in physical matter. This would be the case whether we are considering creation, growth, illness, or whatever. We are suddenly observers of life at a level not previously available to us. One doesn't have to be an ungrounded visionary to become excited about the new terrain awaiting exploration.

Electrophotography, sensitive voltmeters, tobiscopes, high-gain amplifiers, laser beams, holographs, force-field detectors, Schlieren devices, photomultipliers, biometers, auragrams, and other electrodynamic sensing devices being invented even while I pen these words are providing maps for a new kind of journey. Along the way, our vision of life, its magnitude, its potentialities, will surely be expanded, likely beyond anything our imaginations can now picture. The evidence, however exciting and promising, is far from exhaustive and it proffers many more questions than it offers answers. Yet, the questions take on the greater virtue for they prod us beyond premature closure on issues which, for all but the most practical of purposes, will never be closed.

"Science no longer holds any absolute truths," biologist Lyall Watson tells us in *Supernature*. "Even the discipline of physics, whose laws once went unchallenged, has had to submit to the indignity of an Uncertainty Principle. In this climate of disbelief, we have begun to doubt even fundamental propositions, and the old distinction between natural and supernatural has become meaningless. . . I find this tremendously exciting. The picture of science as a jigsaw puzzle, with a finite number of pieces that would one day all be slotted neatly into place, has never been appealing. Experience indicates that things are not like that at all ..."

Science does, indeed, have soft edges. Twenty years ago few questioned that the involuntary nervous system was anything else but that. It was believed that certain functions of the body

were automatic and not subject to voluntary control. Biofeedback—along with a few wandering Yogis—have taught us otherwise. It wasn't too long ago that we discovered the size of the dolphin's cerebral cortex and we haven't been quite so comfortable with our superiority ever since. And now there are serious questions as to whether pain is only a matter of the response of the nervous system or whether it is also an electromagnetic signaling below the cellular level and a process shared by all forms of life regardless of how primitive and even without the existence of any known nervous system. But this isn't science with a hard edge. This is a wandering through nature and life's experiences with doors and eyes open, capitalizing on whatever information comes into view as gleaned by whatever senses or tools we have on hand at the time. Such gatherings are tucked away, not as absolutes on a shelf, but as seeds for further sowing.

This is adventure at its best. It provides us with Prometheus' inclinations to climb the highest hills accessible to us without getting bound unduly to the fruits of our endeavor. The search can go on and we are not tied to what in the future may prove to be a nondefensible position. Lao Tse—that ancient Chinese sage who understood the foolishness of trying to capture blythe spirits in boxes—would approve.

As a product of nature we are all “tuned in” in subtle ways and our biological rhythms and chemistry react accordingly to electromagnetic (EM) and electrostatic (ES) fields, low frequency radiation, ions, and other complex variables.

The brain and its vast web of nerves operates with electrical signals. With the discovery that certain individuals are extremely sensitive to electrical fields to which they are exposed (which cause audio, visual-Phospene, and reaction time effects, headaches, undefined aches and pains, etc.), studies have been made to determine the source of these effects, how they are generated, and how manifested.

Monitoring of the minute electrical fields changes that accompany all biological activity is indicating potential for determination of effects of mind on body processes, early diagnosis of pathological conditions, and development of the optimum environment, EM and ES field intensity measurements around the body and dynamic interrelationships become relevant.

The rapid emergence of .consciousness as a separate though related study has been concurrent with improved electronic equipment for the complex task of monitoring internal, external, and emotional effects associated with living systems. Research is underway and applicaions are already beginning to emerge which will bring increased knowledge, awareness, and understanding of the universe and its complex actions which affect us all.

The implications for medicine, science, technology, psychology, philosophy and culture are staggering and may well result from a blending of electronics, biology, physics, self-

monitoring, and the new science of subjective experience, with the methodology already established in some areas of parapsychological research and systems engineering.

Until comparatively recently biologists regarded the cell as a minute bag of fluid that was relatively simple in structure. But under the electron microscope, cells were seen to be exceedingly complex. What earlier seemed to be a simple cell wall was likely to be folded, convoluted, and multilayered—precisely the right kind of structure to serve as a semiconductor. And components of the cell are likely to include organic semiconductors such as liquid crystals . . . a material that is hypersensitive to temperature changes, magnetic and electric fields, stress, radiation, and trace contamination. To complicate matters even more, many cells have a double outer membrane; electrically, such a membrane functions as a capacitor with the characteristics of a leaky dielectric.

Viewed as a minute but extremely elaborate electrochemical system, the living cell is subject to the influence of EM fields both static and dynamic, as well as ES fields. These fields may induce not just one but a complex system of reactions, as well as act as indicators of environmental conditions. Small wonder, then, that reported field effects at the cellular level are diverse and debatable; the effects will depend upon the field orientation, components of the system, its organization, its energy and other variables. Indeed, effects are often more apparent in living systems which are not healthy.

Recent brainwave experiments indicate that ES fields can influence the rate of spontaneous electrical impulse generation by the nerves. Other recent tests have demonstrated that brightness discrimination and alertness improve under the influence of a positive ES field, and the visual critical flicker frequency is affected. Overall beneficial effects of positive ES field applications are apparently caused by the following: (1) Reduction of the viscosity index of blood and lymph fluid. This produces an antifatigue effect and acceleration of growth factors. (2) Electrophoresis effect causes microbes, virus, and bacteria to travel to the anode positive of an ES field because their net surface charge is negative. This produces germicide and clean room conditions. In larger cells, the internal charges create positive surface charges. Systems for generating artificial electric fields and negative ions are finding greater demand in this country. They have successfully demonstrated possibilities in combating fatigue and allergies. The optimum environment for well-being apparently would involve use of a negative ion generator at one end of the living quarters and a positive ES field generator at the other in order to keep the ions moving, as in the natural earth environment.

The magnetic field of the earth averages about 0.5 Gauss and has continuous pulsations of low magnitude at frequencies ranging from 0.1 to 100 Hz, peaking at around 10 Hz; this is known as the Schumann resonance where the earth-ionosphere cavity acts as a natural resonator. The typical 8-13 Hz alpha brainwave pattern falls precisely in this range. This is known as biological entrainment of the brain by low frequency radiation. Note that similar

frequencies of light and sound pulses can trigger epileptic attacks, induce altered states of consciousness and cause nausea. The step from external sensory stimuli to subconscious EM stimuli in entraining cerebral rhythms is not a radical concept. For example, approaching storm fronts appear to have a local E-field variation of 3 - 5 Hz; the ion balance of the atmosphere and the ES field polarity are also affected by the storm front; in addition to reaction time reductions, headaches, general depression and lethargy occur in weather-sensitive individuals.

The possibilities of bioentrainment for enhancement, training, or suppression of mental activity are already with us when one considers that medical equipment for treatment of hearing loss is now available for inducing sound into the cochlea electrically by use of audio signal modulation of the 100 kHz carrier frequency. Although those in the vicinity hear nothing, the subject near the antenna perceives sound as if through earphones. The ability of many individuals to "hear" radar microwave as a "buzzing like bees" has been well documented. Nurses who work in mental institutions have described patients who are always trying to get away from the "terrible noise." Certain rooms or areas seem more quiet for them (electrical field null points?) How many people are not in mental institutions or psychologically afflicted because of hypersensitivity to electric fields? Russian investigators report that changes in hypothalamus activity can increase the sensitivity to EM fields many times.

A magnet at 60 Hz and 8700 Gauss held to the temple gives rise to a visual light sensation known as the "phosphene" effect. This effect can also be induced by electrical frequencies and chemical, fasting, meditation or fatigue techniques. Electrosleep and electroanesthesia have been widely accepted in clinical and surgical practice in the USSR for more than 10 years. The application of rhythmic, low-power, low-frequency 10-100 Hz current pulses to patient's head produces a pleasant, relaxing effect, and depending on power used, can put the subject to sleep gradually, in the case of insomnia, or rapidly for anesthesia purposes.

According to medical engineer James Beal, the availability of electric field meters, which can monitor living system bioelectric fields as well as the local environment should lead to some interesting applications for mind/body/environment research. The equipment output can be fed into an area scanning system, which with suitable electronics of multiple fixed detectors and multiplexing, can produce a two-dimensional plan view in real time of the ES field potentials around the living system and the way these potentials change patterns during disease and mental states. This equipment can then serve as a biofeedback device. Feasibility will be established for development of rapid imaging and recording equipment, similar to present infrared medical scanner systems. Results may show that this phenomenon is an ES analogue of what is known as the human aura ... at least the ability to observe mind/body/environment interactions would be improved and we could become more aware of how the mind affects the body through emotional effects on the electrochemical balance. (We now know that acupuncture points differ considerably in resistance from the rest of the body, and these values change during treatment.)

According to Beal, some recent developments have demonstrated that a reasonable amount of energy is emitted by the body in the X band (9 GHz) microwave region. Experiments were performed with an X-band microwave radiometer of the correlation type. The microwave emission shows a large increase from the body relative to the background. Other interesting features have been observed such as information about emotional, pathological, and physiological states of the system. The radiation emissivity of the microwave region changes with electrical and dielectric activity of the living system.

A space scientist, Dr. C. D. Cone, formerly of NASA Langley Research Center, and now with Eastern Virginia Medical School, has devised and demonstrated a theory that helps to explain the source of uncontrolled malignant growth and indicates shortcuts to development of chemical countermeasures against cancer. Dr. Cone specialized in the investigation of space radiation effects on the blockage of cell division. The Cone theory proposes that the division of body cells is controlled precisely by the pattern of ion concentrations on the surface tissues of cells. The pattern is formed by the electrical voltage that normally exists across cellular surfaces and varies from one part of the body to another. This theory has provided, possibly for the first time, an explanation of the functional connection between the two major pathological features of cancer . . . uncontrolled growth of cells and the spread of the disease in the body. The theory implies that the basic deviation from normalcy producing both of these conditions lies in an alteration of the molecular structure of the cell surface.

Dr. Barry Allan and Ralph Normal of the U.S. Army Missile Command, Redstone Arsenal, Alabama, indicate in their description of bioelectricity and "Biowater" that a living organism is delicately balanced, especially chemically and electrically. It seems predictable that the highly structured water within the cell could, by the exclusion of certain ions (conducting), form the insulation channels of the organism. Further, semiconducting and conduction phenomena might be expected if certain chemical modifications to highly pure, immobile layers of water were made by life processes. Conduction could easily occur in the less structured aqueous solutions and any mechanism that disrupts biological water structure will certainly disrupt the biological transfer of electrons.

My interests in field effects on biological systems and intended and unintended manipulation of the environment by electronic means brought to my attention the endeavors of a handful of scientists, including retired CIA and U.S. Army Intelligence staff and those sharing notes through the medium of the Planetary Association for Clean Energy, who have been monitoring biologically significant transmission emanating from Russia. I have acquired quite a stack of material on this subject and, as these papers are available for study, no attempt will be made here for an abbreviation or abstract. However, I believe these investigations are of some importance for the evidence would indicate that living systems can be profoundly affected by detrimental signals. On the other hand, there are other known signals that can be of benefit to human health and development. Briefly, a glance at the detrimental impact of certain

transmission and then an overview of some of the possible implications of the beneficial use of other signals.

It is well known that strong pulsating electrical fields pulsing within the frequency range of the alpha and/or beta rhythms of the human brain can interfere with the physiological functioning of the mind and produce devastating psychological effects in most people.

Based on these observations, there has been considerable serious investigation of the use of powerful radio transmissions as a mass psychological weapon in the arsenals of modern warfare. A Pentagon Defense Intelligence Agency classified report, parts of which have been released into the public domain, states that Soviet researchers have found that people exposed to low-level microwave radiation “experience more neurological, cardiovascular and hemodynamic disturbances than do their unexposed counterparts.” According to this report, scientists from the Soviet Union know a lot about the biological effects which can be derived from microwave radiation, and methods are known to cause disoriented human behavior, nerve disorders and even heart attacks.

One can only speculate as to the reasons for the Soviet 10 Hz transmissions; but regardless of the actual purpose of these incessant pulses of energy, the possible adverse effects on human behavior and health should not be ignored. 10 Hz is a biologically significant frequency. It is known that electrical stimulation at certain repetitious rates can produce widespread and complicated responses in people, and even seizures in epileptics. Both the human alpha waves and voluntary muscle tremor respond in similar ways. These biological signals normally slow down in relaxation and sleep and speed up during a general alerting of the human system. Interestingly, experiments by Lippold at University College in London on the mechanisms of physiological tremor have shown that a stimulus of 30 milliseconds duration to the finger can set off a series of sinusoidal waves of the same approximate 10 Hz frequency as human muscle tremor that are superimposed over the natural tremor frequency. Since it was found that this external stimulus must have a duration of 30 milliseconds to be effective, and since the Soviet 15 millisecond 10 Hz pulses may produce acoustic impulses of about twice this duration, it would not be surprising to find them interfering with the natural muscle tremor feedback mechanisms of humans. 10Hz pacemaker systems have been found in the thalamus of the brain; and the hypothalamus is a region very sensitive to electrical stimulation. Also low power radio waves have been seen to produce changes in the regulatory activities of the hypothalamus. The whole human endocrine system displays some characteristics of a biological amplifier that may be triggered into activity by low powered RF energy.

In a recent report by Andrijah Puharich, M.D., LL.D., the following statements were made:

“... there is one application of the Tesla Magnifying Transmitter (TMT) that was not, to the best of our knowledge, described by Tesla. This is the possibility that the fundamental Tesla

frequency (6.67 - 7.83 Hz) can act on the human brain in such a way as to influence behavior through mind control. In order to test out this possibility Puharich and Beck (Bob Beck, west coast engineer) undertook to carry out experiments on sophisticated humans with the following results:

- a) The magnetic pulse of the earth was monitored by means of a tuned magnetic coil, and it was found that the earth 'beats', with a steady sine wave with a power peak at the upper end of the Tesla frequency, ca, 8 Hz.
- b) The earth, or artificially generated 8 Hz magnetic sine wave is not attenuated, nor wave-shape distorted by passage through the walls of a steel-Copper 'shielded' room.
- c) A weak (1mw) 8 Hz magnetic sine wave directed at a human being will entrain the brain waves in 4 to 6 seconds. The psychological effects of such 8 Hz magnetic sine wave will modify human brain waves in 6 to 10 seconds. The psychological effects of a 4 Hz sine magnetic wave are negative - causing dizziness, nausea, headache, and can lead to vomiting. This is a cholinergic effect.
- d) A magnetic wave about 8 Hz is also psychoactive, and produces somewhat negative (adrenergic) effects.
- e) The means and methods used above to initiate and measure the psychoactive effects are all state-of-art.

While no means has yet been discovered to shield against the effects of such signals, there is the possibility of a more powerful override signal, or the use of on- body or near-by pocket-size transmitters which might inhibit or modify other signals. In any case, there is a flip side and this has to do with the work of the Monroe Institute of Applied Sciences (also Peter Manners, et al). The work with beneficial signals and frequency following responses or brain entrainment is significant and has application in our activities.

The Monroe Institute discovered that phased sine waves at discernible sound frequencies, when blended to create 'beat' frequencies within the ranges of electrical brain waves found at the various stages of human sleep, will create a frequency following response (FFR) within the EEG pattern of the individual listening to such audio waveforms. The FFR in turn evokes physiological and mental states in direct relationship to the original stimulus. With the availability of this tool, it becomes possible to develop and hold the subject into any of the various stages of sleep, from light Alpha relaxation through Theta into Delta and in REM (dreaming). A generic patent on the method and technique was granted to the originator, Robert Monroe.

The goal was to move consciousness (CS) into sleep patterns and still maintain CS as it is understood in the waking state. Experimental sessions with a number of subjects revealed that CS in and of itself became enhanced rather than restricted. Not only was the subject able to ease through the normal diminution of physical sensory input in sleep, without loss of CS, but it

was found that CS was not dependent upon these same physical sensory signals. It was further discovered that CS became greater in its capacity without the heavy physical sensory data presenting strong interference and distortion. The determination that thinking, cognition, self, personality, and any other components of consciousness are not dependent upon physical sensory signals was in itself a most profound learning process to most participating subjects.

It was found that the beat frequency patterns could be applied binaurally, i.e., that one set of signals be inserted in one ear, another in the other ear. In open air, extremely low frequency brain wave patterns (30 Hz - 1.5 Hz) were below audio perception levels, thus, the pattern was expressed in amplitude rather than actual frequency of the sound itself. The effect of binaural insertion implied a possible synthesis of the beat frequency by the brain itself. A 200 Hz signal in one ear and a 210 Hz signal in the other could suggest to the brain an effective 10 Hz resonance.

The results were spectacular. A quantum jump in the entire process became evident. Time of response shortened, duration extended, degree of intensity was dramatic, all in the FFR patterns shown in EEG traces. The period that followed was one of exploration of response to audio frequencies above EEG ranges, and often beyond normal hearing frequencies. The search was aimed at the determination of other effective audio frequencies, whatever such effect might be. The process was a tedious one, as only a slow sweep tests permitted the FFR to appear, due to the timedelay response and the reporting of the subject. Moreover, to be acceptable as to the nature of the response, a double-blind consensus of subjects was a part of the criteria.

A number of definite, repeatable responses were found. Attention could be varied from non-conscious delta sleep of total lack of CS and comatose physical state up through intense beta-type concentration of one-pointed fixation, and into high-anxiety intolerable "nervousness". However, much depended upon the sequence of the signals offered. For example, an extremely "clear" form of mentation was obtained by first aiding the subject to achieve mind-awake-body-asleep through one set of signal stimulation, then applying a second, overlapping signal that would normally be too "nerve-racking."

With the advent of a wide interest in brain-hemispheric theory and study, the Institute undertook to explore the bi-lateral effects of FFR. It was found that extreme disorientation could be produced temporarily by inserting different unrelated signals in each ear. Moving more cautiously, a "de-tuning" of either hemisphere was possible by the insertion of low EEG range frequencies in the opposite ear. Conversely, either hemisphere could be stimulated by the same method, by application of specific beta sound patterns and beyond. The natural outcome of this, to seek patterns which would balance or adjust the relationships between the left and right brain, and help produce desired changes in behavior.

Utilizing the Institute FFR process in the binaural mode, it was found that a bilateral EEG on a subject could be established whereby the dominant wave form of each brain hemisphere was displayed on a dual-trace oscilloscope. Binaural beat-frequency stimulation creates a sustaining FFR that is synchronous in both amplitude and frequency between the brain hemispheres.

There is a partial entrainment effect, and there are indications that it can be learned much as in the biofeedback model. Whether the synthesized signal crosses the Corpus Callosum (the nerve network between the brain hemispheres), travels through the brain stem, limbic system—has yet to be determined. It appears that new neural pathways are established as a result.

Work with the Monroe system and the brain hemispheric synchronization-coherence has brought forth a number of interesting prospects. Some of these are:

1. **Balanced health:** The first and prime effect has been a stabilization of the mental and physical energies of the participant. Most report dynamic changes in physical vitality, more restful sleep, a greater sense of well-being, a general serenity, new enthusiasm for living, and release from false identities and obligations, to name a few.
2. **Stress-Reduction:** Used principally in cases that have resisted conventional approaches, results derived appear to be caused chiefly by a change in the overview of the individual, rather than dealing with specifics.
3. **Surgical Support:** Applied before, during and after surgery. When used in its entirety, this special system helps the patient in reduction of anxieties, control of life energies, reduction of pain, and acceleration of natural body healing. Patients consistently report major gains in all of these areas.
4. **Control of pain:** It is not yet clear why the method is as effective as indicated. The suggestion for control of chronic pain would appear to be quite insufficient to provide the dynamic changes reported again and again. As little as one week of work with the tapes has often been sufficient. There is some speculation that it is related to the effect noted in (1) above.
5. **Stroke recovery:** Although very little has been done with the Monroe system in this area, the preliminary findings bear reporting. The synchronization of the hemispheres of two participants shortly after the onset of minor strokes, each produced definite improvement in the dysfunction. In one case, the subject had suffered minor speech difficulty and intermittent motor instability in his legs. After three hemi-sync[®] sessions, his speech had cleared considerably, and he was able to walk steadily without effort. Three months later, there had been no retrogression that could be observed.
6. **Psychotherapy:** When applied in the interview setting, the hemi-sync[®] mode appears to help the patient reach very quickly long-submerged levels which have resisted penetration by -most traditional means. It has been stated that 10 interviews using the system may be the equivalent of 10 years of orthodox treatment.

7. Problem solving: The coherent brain-mind focused in a given area by specific FFR patterns apparently has a far greater capacity to view any condition from a holistic position than “normal” capacity consciousness. It can be speculated that it is the result of simple utilization of completer interaction between brain hemispheres. In a demonstration with a group of forty-five executives of a major corporation, participants were asked to seek the best answer they could for his own individual problem, while experiencing hemi-sync. Thirty reported decision-solutions of a quality for the most part unexpected. Each was sure it was the “right” answer.
8. Accelerated learning: The pure synchronization effect alone offers many potentials on several levels of learning by the simple provision of focusing of attention For example, its use by students while studying enhances retention and recall. One college student was able to raise her college grades from 2.5 to 3.9 average in one quarter, using the method. Another test showed an ability to perceive and remember oral information at a rate of 1,000 words per minute. (A speech compressor was used to create the material.) Another participant was able to multiply two eight-digit numbers mentally, with 100% accuracy; without the hemi-sync effect, he had difficulty with sets of two digit numbers. Multiplication tables from 13 to 24 were used as rote material, with 60% accuracy in recall after one session. Under the same conditions, mentalphysical coordination activities were simulated with a form of guided imagery. Particular tests were performed chiefly in sports where any changes could be measured. The most indicative of these took place where six golfers all reduced their scores by as much as five strokes. The implication that the method could be employed in more constructive directions and in many forms appears to be limited only by the need
9. Creative stimulus: A well-known training authority stated that over 30,000 engineers on the company payroll, savings and/or profits could be increased by some \$200,000,000 if this employee group added 2% to their creative ability. Response in this area from the Monroe system has been consistent and perhaps one day the Institute will be able to conduct such an extensive study as this. Tests already performed with a small and diverse engineering group some eleven in number have shown probability to surpass easily such percentile. Several in the group have developed new designs in their respective fields which were interesting enough to warrant patent application. One participant in another Monroe program became inspired to write a book, completed it and sold it to a publisher within six weeks. A second became proficient and prominent as a commercial artist, a third turned composer and arranger. Several hundred have come forth with new ideas, methods, concepts and viewpoints that have brought major changes in their life styles. The value of the latter can be assessed only by the individual at first, and subsequently by those around him.

Initially in our work at the Center we will be using a biofeedback mode coupled with audio signals. Our hypothesis is that frequencies administered to subjects via a sensory mode can

produce desired effects. The frequencies are generated on stereo cassette tapes and are administered to subjects by means of headphones. The signals are designed to produce beneficial and predictable results. These include relaxation, stress reduction, pain control, voluntary control of internal states, mental alertness, expanded states of awareness, more acute perceptions, and synchronized hemispheric brain functioning. It is our belief that the program will contribute to health maintenance, healing and growth states.

A five-channel EEG machine will be used to provide biofeedback training concurrent with listening to the audio signals. Subjects will be connected to the EEG via electrodes picking up brain signals from the frontal, mid-parietal, mid-occipital, left and right temporal lobes. Feedback is provided by frequency—level sounding devices and visually by means of digital numbers representing amplitude of signals.

Effectiveness of the training will be determined by means of (a) subjective reporting; (b) frequency-level, amplitude, and duration responses, and (c) monitoring of respiratory and heart rates and changes in blood chemistry. Prior to their participation, subjects will be requested to fast for 14 hours before their initial blood tests.

The nature of the biofeedback and audio signal training will be determined by desired results, i.e., stress reduction, pain control, expanded awareness, etc. In most instances, it will be necessary for participants to allow a minimum of 45 minutes for each session.

The EEG instruments also will be used to monitor brainwave patterns of persons with certain diagnosed psycho-physiological problems.

As mentioned above, initially the frequencies will be administered as audio signals. However, we may incorporate visual qualities in the form of lighting with various colors and pulsations. And at some later date we may explore the use of other sensory modes such as tactile application of frequency stimulation.

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